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AUTHOR Moe, Alden J.
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ABSTRACT

Comprehension is a process that occurs within the reader and is at least partially dependent on cohesion and coherence. The concept of cohesion is used to show how sentences which are structurally independent of one another may be linked together. Cohesion exists within a text and is not the same as coherence, which is something the reader establishes in the process of reading and which may be viewed as the cognitive correlate of cohesion. In order for a text to be coherent it must have both cohesion and organization. While cohesion is considered to be a measureable linguistic phenomenon, coherence is more global and not as directly amenable to evaluation. The importance of cohesion in text is major since it provides semantic continuity and permits coherence and comprehensibility. The more implicit cohesive relationships are, the more difficult a text is to understand. Thus, explicitness and comprehensibility are highly related. When a reader is unable to establish coherence from the text, then the normal cognitive processes are stopped so that the reader's long-term memory can be searched. The more inferences the text requires, the heavier the processing load for the reader and the more difficult it is to comprehend. (TJ)

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Alden J. Moe
205 Education Building
Purdue University
West Lafayette, Indiana 47907

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COHESION AS A FACTOR IN THE COMPREHENSIBILITY OF WRITTEN DISCOURSE[1]

Alden J. Moe

Purdue University

While comprehension is a process which happens within the reader when a reconstruction of the author's meaning is achieved, it can be argued that there exists, within text, degrees of comprehensibility which are reader independent; the prevailing concept of readability and the application of readability formulas is based on such a premise. It is this writer's contention that the cohesive ties which bind (or bridge) sentences semantically account for a large portion of this comprehensibility in written discourse.

This paper describes the concept of cohesion in text, discusses the distinction between cohesion and coherence, and discusses the relationship of cohesion (and coherence) to the comprehension of written discourse.

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Cohesion

The most definitive treatment of cohesion is provided by Gutwinski (1976) and Halliday and Hasan (1976) who state that cohesion in text is achieved by establishing semantic relationships where the interpretation of some element in the text depends on that of another. Cohesion may also be viewed as a type of redundancy which exists among the various sets of semantic resources which link one sentence with another. It is important to note that the term "cohesion in text" was introduced by Halliday "explicitly for the purpose of linguistic analysis" (Gutwinski, 1976, p. 28) and, as such, should be thought of as something which exists within text, but not within the mind of someone who reads text.

It may also be important to emphasize that cohesion "is not just another name for discourse structure" (Halliday & Hasan, 1976, p. 10). Rather, the concept of cohesion is used to account for--or describe in a systematic way--the relationships which exist within discourse. Cohesion is used to "show how sentences, which are structurally independent of one another, may be linked together" (Halliday & Hasan, 1976, p. 10).

The linkages which establish cohesion are called ties and a single instance of cohesion is a cohesive tie. Cohesion may be intra- or inter-sentential and both types are found in the following sentences.

> David is going to buy his wife a new car. She
> wants a new Buick for her birthday.

An intra-sentence cohesive tie is found in the first sentence connecting David and his. Inter-sentence ties exist between She and wife, new and new, and Buick and car. All of these ties are anaphoric (relate back), as most cohesive ties are, although cataphoric (relate forward) ties also provide cohesion in text.

The anaphoric ties which link a pronoun with a proper name are among the most common cohesive ties. In the following sentences, several examples are provided:

> Mary thinks she needs a new typewriter. She claims her old one has a broken carriage. Her work will suffer if it isn't purchased soon, she believes.

Although relatively uncommon in basal texts, cataphoric ties are occasionally found in the introductory sentences of short stories where the meaning of "it" is not clear for several sentences--and in some cases several paragraphs. Note the use of "it" in the following:

> It had happened before and it would probably happen again. It wasn't Jane's fault. It was Michael's; he simply hadn't expected so many guests and he didn't know that they would be so hungry.

While the meaning of "it" may not be completely clear, it becomes more apparent as more of the text appears. Ostensibly, the meaning of "it" may become quite clear with the addition of the following sentences:

> As in previous years, Jane and Michael held a party for the new faculty members. Jane had sent invitations to thirty-one guests, but Michael had expected only twenty.

Five distinct types of cohesion have been identified by Halliday and Hasan (1976). The five types are reference, substitution, ellipsis, conjunction, and lexical cohesion and each of the five categories is represented

in text by particular features (repetitions, omissions, uses of certain words, occurrences of certain constructions). They also provide a rather elaborate coding scheme for analyzing text in terms of number and types of cohesive ties. Their system allows for the quantification of total number of cohesive ties and the identification of types of cohesive ties in a text. A possible shortcoming of the system exists, however, in the fact that in the quantification of ties it is not possible to determine the strength of the tie or the degree of binding which links the semantic relationships. Such a determination is related more to psychological analysis, however, and the Halliday and Hasan system is intended to be used for the linguistic analysis of connected discourse.

Cohesion and Coherence

Cohesion is something which exists within text and is a component of coherent text, but cohesion is not the same as coherence. In addition to cohesion, one other factor must be present for a text to have coherence; that factor is organization (Perfetti & Lesgold, 1977) and refers to the presentation of information (also called staging by Grimes, 1975). Another factor, that of register--which is also related to organization--may also add coherence to text since it deals with situational consistency (Halliday & Hasan, 1976).

Apparently the current linguistic thought is that cohesion should be viewed as one of the language facets which together provide for coherent text (Grimes, 1975; Halliday & Hasan, 1976; Gutwinski, 1976). These linguists consider cohesion to be a measureable linguistic phenomenon, whereas coherence is considered to be more global and is not as directly amenable to evaluation.

Although it is not always clear, the psychologists currently discussing "cohesion" and "coherence" appear to differentiate between the two and use "coherence" as meaning related. For example, Frederiksen (1977) believes that in learning to read children must develop the ability to infer coherent interpretations. This interpretation also appears to be consistent with that of the current linguists.

Furthermore, when Kintsch and van Dijk (1978) refer to a coherent text base they appear to be referring to one that has cohesion. They state that the "connection relations between propositions in a coherent text base are typically expressed by connectives such as 'and,' 'but,' 'because,' 'although,' 'yet,' 'then,' 'next,' and so on" (p. 390).

While cohesion exists within text and adds to the coherence of text, it may be useful to think of coherence as something the reader establishes--or hopes to establish--in the process of reading connected discourse; in this respect, coherence may be viewed as the cognitive correlate of cohesion. Generally, however, cohesion is a text-related phenomenon, coherence is both a text-related and reader-related phenomenon, and they are not considered to be synonymous terms.

Additional information on cohesion, coherence, and related terms may be found in Gutwinski (1976), Just and Carpenter (1977), Kintsch and van Dijk (1978), Kintsch and Vipond (1978), Marshall and Glock (1978-79), Meyer (1977), and Winterowd (1970).

Cohesion, Coherence, and Comprehension

The importance of cohesion in text for the reader who must, explicitly or implicitly, establish coherence among the contents or connected propositions of a passage is major since it provides the semantic continuity "in

expressing at each stage in the discourse the points of contact with what has gone before....It is the continuity provided by cohesion that enables the reader...to supply all the missing pieces, all the components of the picture which are not present in the text but are necessary to its interpretation" (Halliday & Hasan, 1976, p. 299).

If a text displays cohesion, that is, if measurable semantic relationships can be found in text it follows (all other textual language factors being equal) that coherence in the mind of the reader will be more easily established than if little or no cohesion exists; the very recent research by Marshall and Glock (1978-79) would suggest that this is indeed the case. If text is not cohesive, coherence may be difficult to achieve in the mind of the reader (Frederiksen, 1977; Kintsch and van Dijk, 1978; Kintsch and Vipond, 1978). A recent review of the literature on linguistic inference brought Irwin (1978) to the same conclusion and she stated that the "research suggests that the number of intersentential inferences necessary to provide coherence in text may be related to its readability" (p. 36). The more implicit the cohesive relationships the more difficult the text is to comprehend. Indeed, it appears that explicitness and comprehensibility are highly related and that in writing comprehensible discourse one should "make all important information explicit" (Marshall & Glock, 1978-79, p. 55) if one can do so without producing stilted or artificial text.

For the fluent reader, comprehension is usually an automatic process and makes low demands on the reader's cognitive resources (Kintsch & van Dijk, 1978; LaBerge & Samuels, 1974). When the reader is unable to establish coherence from the text then the normal cognitive processes are

stopped so that the reader's long-term memory can be searched or so that a passage of text can be reread--often for the linking or bridging (Clark, 1974) of information. In short, the more inferences the text requires, the heavier the processing load for the reader.

The potential of some of the discourse analysis systems (such as those by Fillmore, 1968; Grimes, 1975; and van Dijk, 1972) to provide insights into the reading comprehension process has been fulfilled to some extent (by the work of Frederiksen, 1975; Kintsch, 1974; and Meyer, 1975). The potential that cohesion provides for a better understanding of the comprehension process is yet to be fully determined. The application of this linguistic system--perhaps with modifications--to provide a better understanding of the relationship of text structure and reading comprehension needs to be studied carefully; researchers have only begun to investigate this relationship.

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